

# SUPER TYPHOON LOLA (03W)

Super Typhoon Lola was the first of three super typhoons (tropical cyclones with 130 kt (67 m/sec) or greater intensity) to occur during 1986. Lola's appearance coincided with a very destructive tropical cyclone in the southern hemisphere, Tropical Cyclone 33P (Namu) (see Figure 3-03-1). Namu, an unusual "twin" cyclone with Lola, was the worst tropical cyclone to strike the Solomon Islands this century. Over 90,000 people were left homeless on the island of Guadalcanal and nearly 100 people died as a result

of the fury of Namu. From a historical perspective, Lola was of particular interest to residents of Guam since its appearance coincided with the ten year anniversary of Super Typhoon Pamela's devastating visit to the island on May 21, 1976. Super Typhoon Pamela (1976) destroyed 40 percent of the homes on Guam and caused extensive damage with torrential rains and maximum sustained winds of 120 kt (63 m/sec) and gusts to 145 kt (70 m/sec).

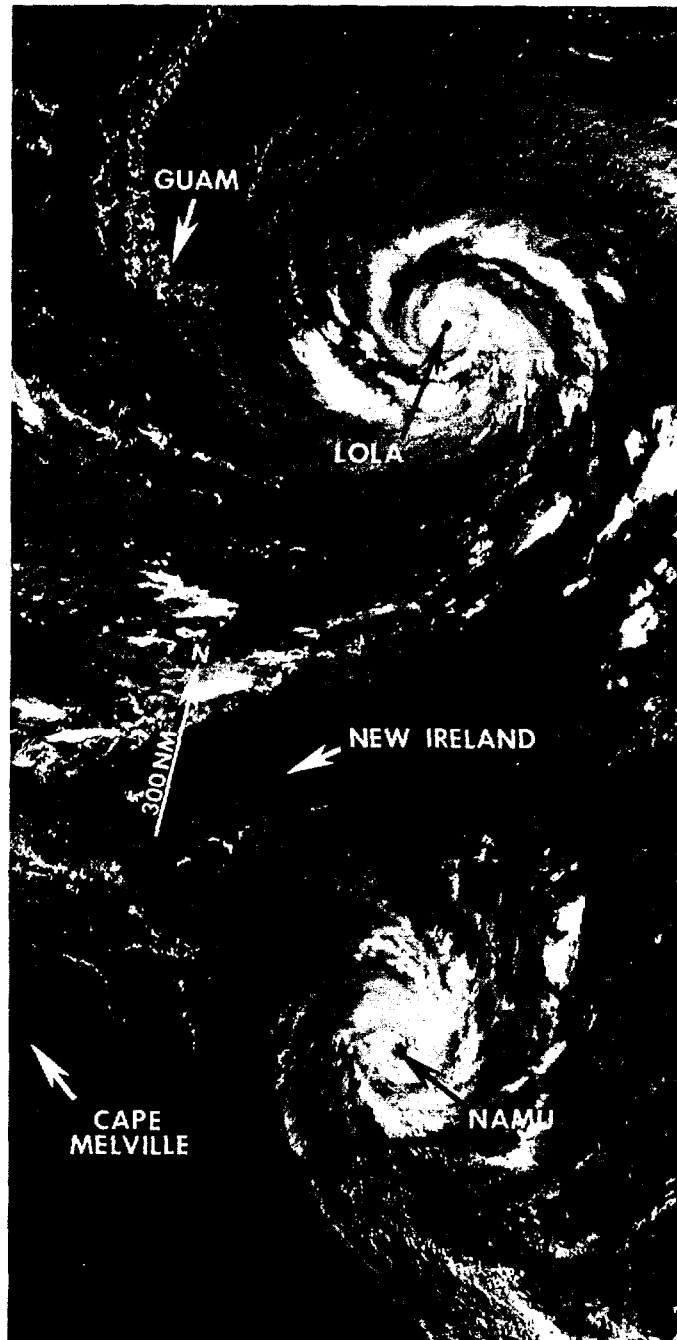
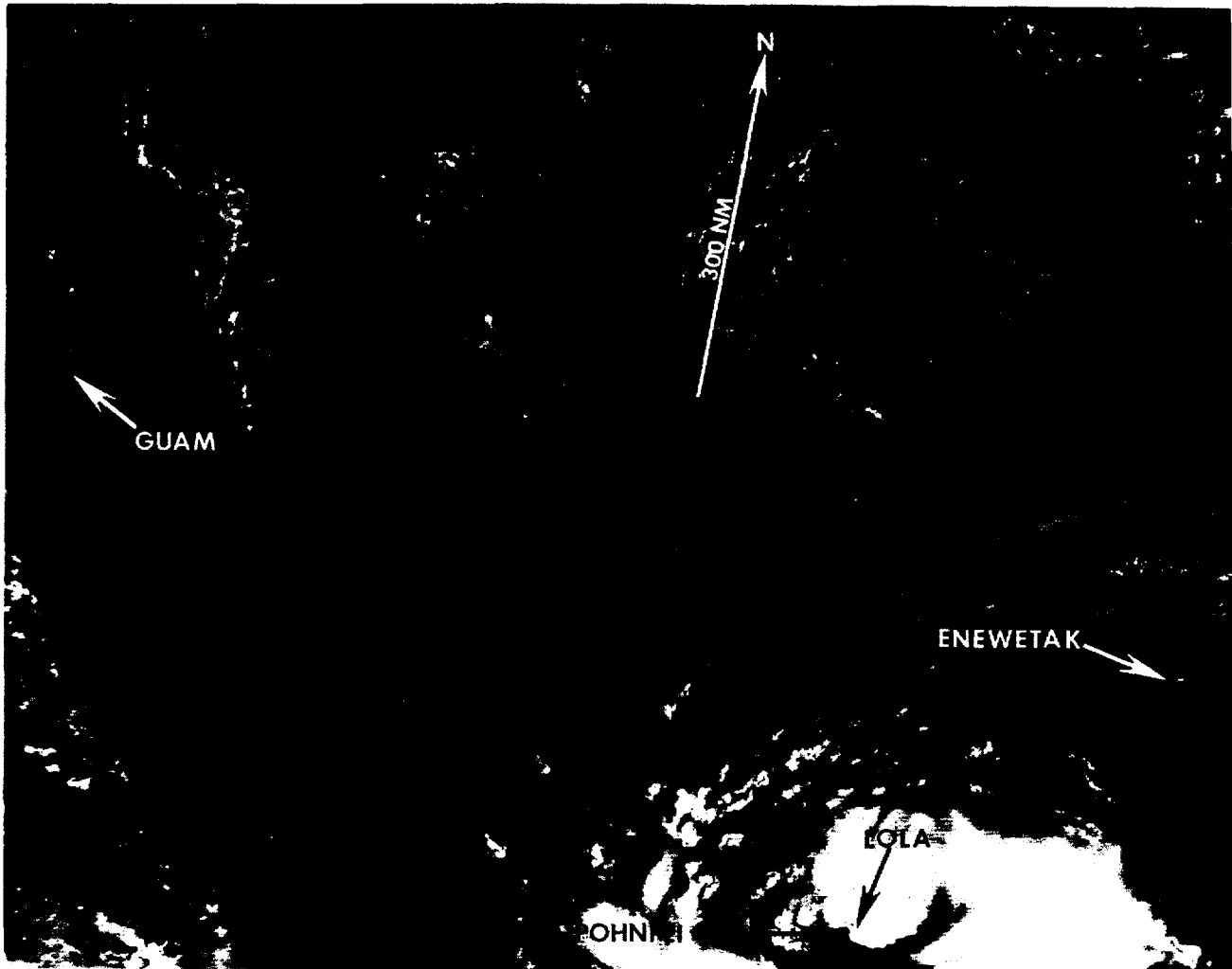


Figure 3-03-1. Super Typhoon Lola and Tropical Cyclone 33P (Namu). This is an unusual case of "twin" tropical cyclones occurring in opposite hemispheres (192349Z May DMSP visual imagery).

Lola began as a tropical disturbance in a very active monsoon trough extending from south of Guam eastward to the Marshall Islands. This area of disturbed weather was enhanced by two opposing wind flows - cross-equatorial winds provided strong southwesterly flow and the tradewinds provided northeasterly flow. For several days prior to Lola's inception, destructive winds and torrential rains battered the Caroline Islands. The island atoll of Nukuoro 285 nm (528 km) southeast of Truk, for

example, experienced damage from winds of 40 kt (21 m/sec) with gusts to 60 kt (31 m/sec) on 14 May associated with severe thunderstorms.

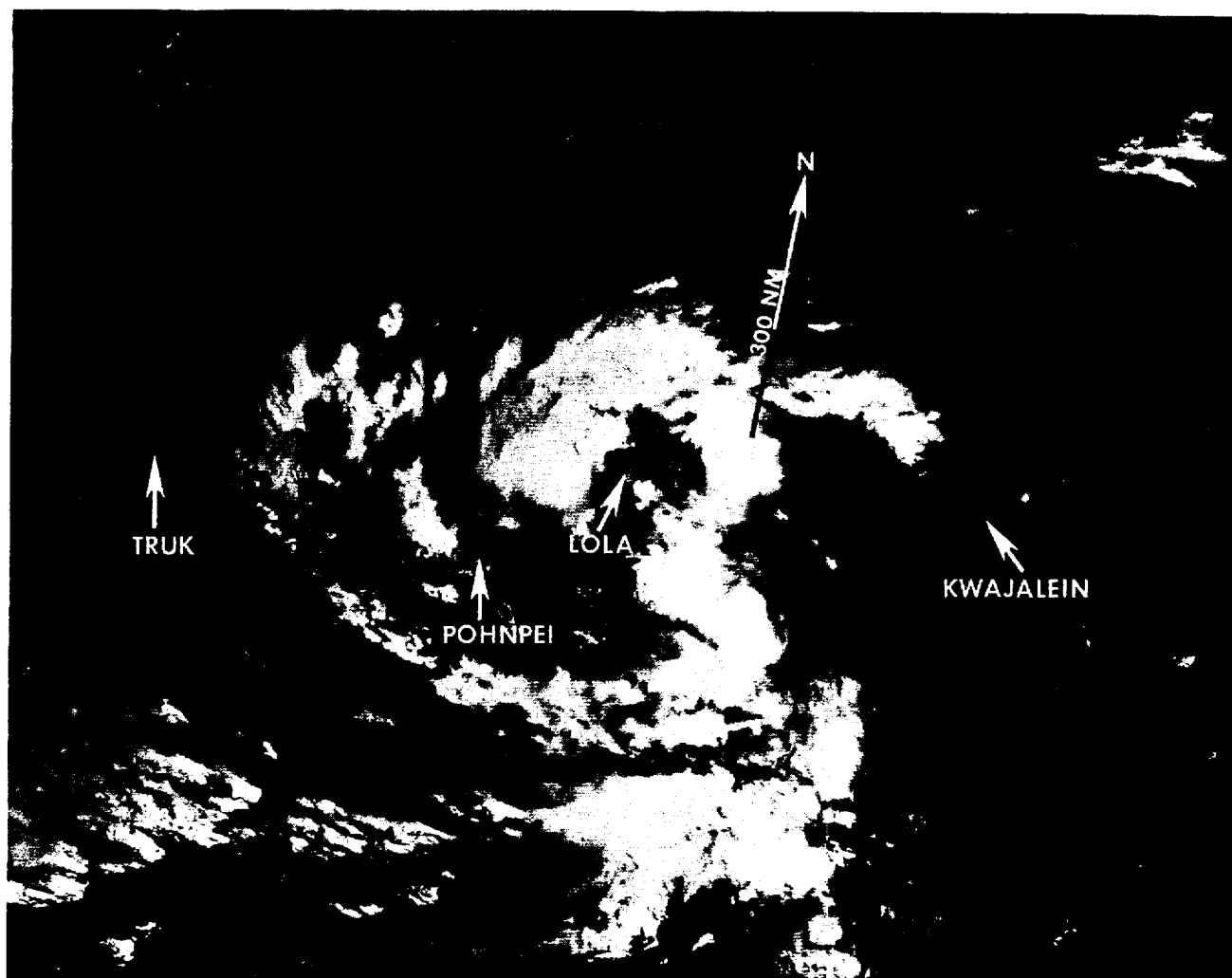
At that time Lola was just a tropical disturbance 50 nm (93 km) northwest of Truk and received mention on the Significant Tropical Weather Advisory (ABPW PGTW) because of its persistent cloudiness. Within 24-hours, sea-level pressures dropped throughout the monsoon trough as Lola increased in organization (see Figure 3-03-2). These



*Figure 3-03-2. Lola showing increased organization at low latitudes (152330Z May DMSP visual imagery).*

events prompted the issuance of a Tropical Cyclone Formation Alert (TCFA) valid at 152330Z. Aircraft reconnaissance scheduled to investigate the disturbance at that time turned back to Guam due to the loss of hydraulic fluid. A second TCFA was issued at 161530Z when Lola moved outside of the alert area. The first warning on Tropical Depression 03W followed at 170000Z based on analysis of satellite imagery (Figure 3-03-3) and synoptic data that clearly indicated a closed circulation. An

aerial reconnaissance investigative mission later that day discovered winds of 40 kt (21 m/sec) at the surface and an estimated minimum sea-level pressure (MSLP) of 981 mb. Lola was subsequently upgraded to a tropical storm with the second warning, valid at 170600Z. Due to its proximity to Pohnpei, Lola caused extensive damage to the island; mostly due to flooding and high winds. Authorities there claimed it was the worst battering Pohnpei had suffered in the past 28 years since Typhoon Ophelia (1958).



*Figure 3-03-3. Lola a day later showing more convective activity and curvature (162309Z May DMSP visual imagery).*

By early morning on the 18th, Lola was already at typhoon intensity (see Figure 3-03-4). Initial interpretation of data from the second synoptic track mission flown along 18 degrees North Latitude determined there were no obvious breaks in the ridge north of Lola (Figure 3-03-5), thus the forecast took Lola northward initially, and then westward under the ridge. (Upon closer inspection of the 500 mb data, there is cyclonic turning at the western portion of the track. This implies a weakness in the subtropical ridge slightly north of the track and near 150 degrees East Longitude.) By late afternoon, Lola's intensity had increased to 75 kt (40 m/sec)

and an eye became clearly visible on satellite imagery. A third synoptic track, flown the next day (19 May), again along 18 degrees North Latitude, still did not find any breaks in the subtropical ridge and the forecast appeared to be right on track. However, Lola was only two days away and all of Guam worried that this might be a repeat of Super Typhoon Pamela (1976). JTWC's warning on the morning of the 19th indicated Lola would become a super typhoon (see Figure 3-03-6). A three fix mission was flown into Typhoon Lola that morning to determine the rate at which it was intensifying. The results confirmed the worst - explosive deepening.

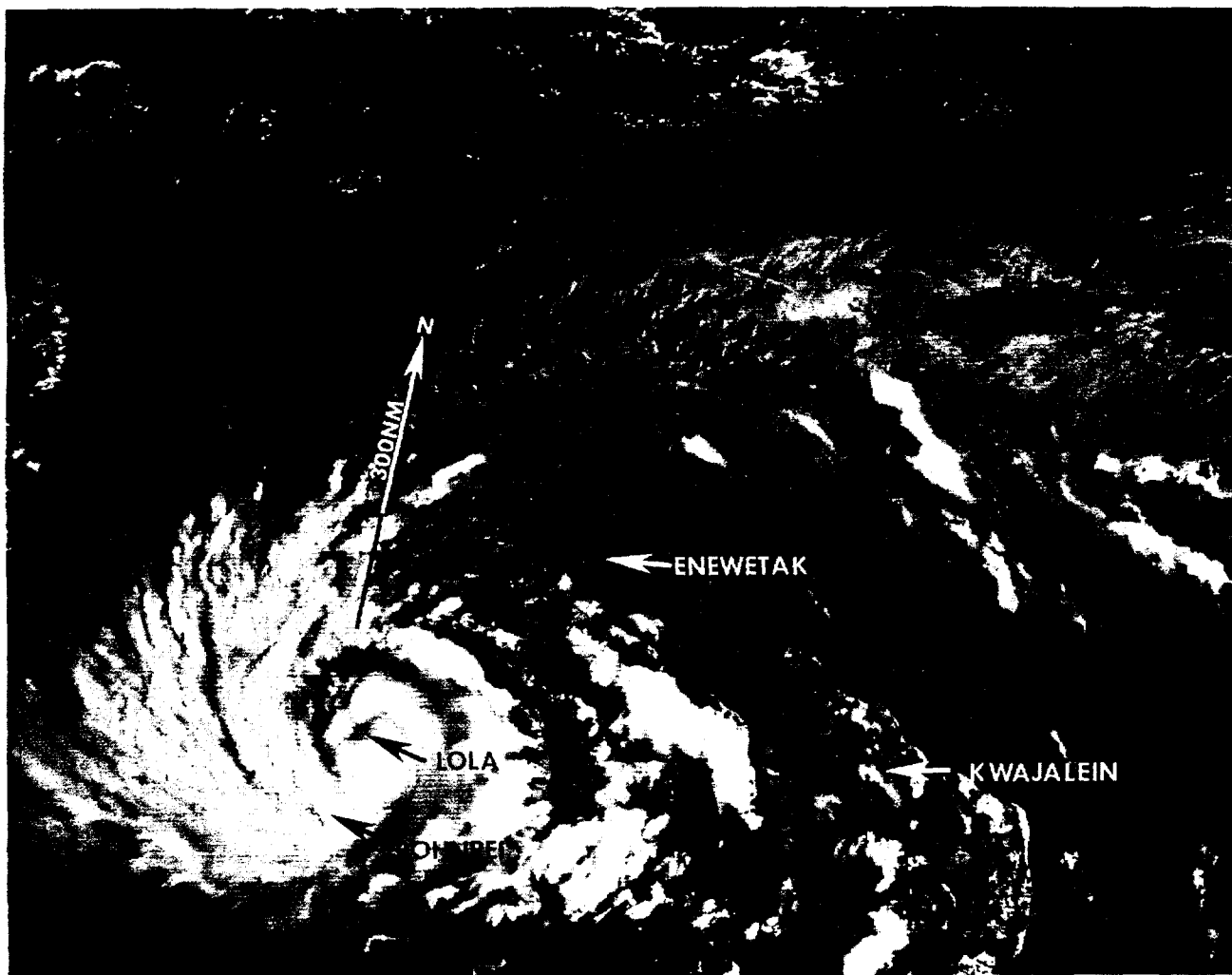


Figure 3-03-4. Lola on the third day reached typhoon intensity (172249Z May DMSP visual imagery).

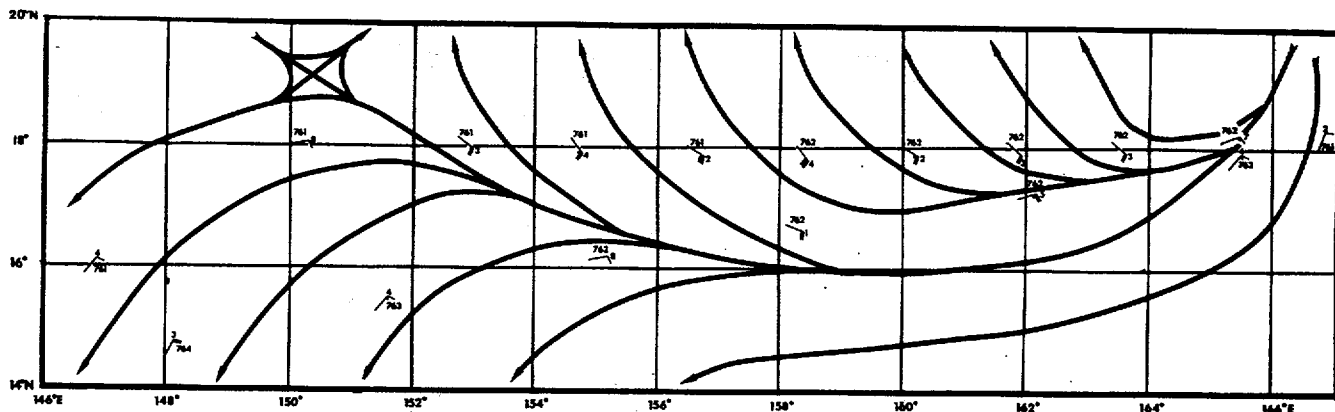


Figure 3-03-5. Data from the second synoptic track (172300Z through 180700Z) shows no obvious break in the subtropical ridge. (Upon closer inspection the streamlines imply a neutral point in the flow slightly north of the track and along 150 degrees East Longitude.)

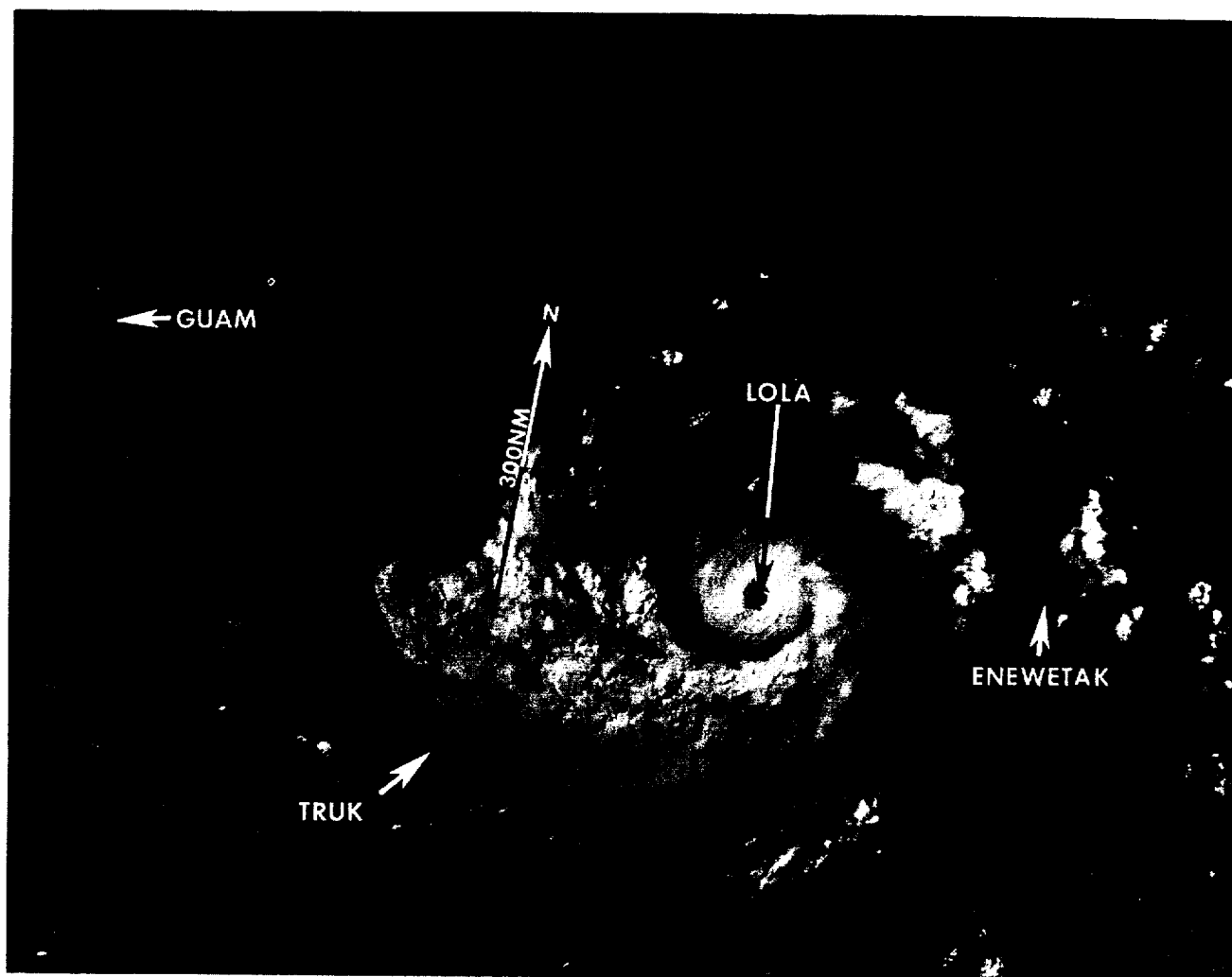


Figure 3-03-6. Lola near maximum intensity of 150 kt (77 m/sec) (190414Z May NOAA visual imagery).

Lola became a super typhoon at 130 kt (67 m/sec) and was forecast to intensify even more as it neared Guam. A fourth synoptic track mission was sent out on 20 May to locate any weakness in the subtropical ridge. The data showed the ridge at 400 mb displaced south and west across the path of Lola with a strong zone of mid-level divergence stretching from Guam

through the northern Marianas (Figure 3-03-7). The forecast philosophy changed to a recurvature track rather than keeping the track toward the west-northwest. The intensity estimates indicated Lola had peaked at 191800Z at 150 kt (77 m/sec) and was now decreasing (see Figure 3-03-8). Aircraft reconnaissance that night (20 May) confirmed this

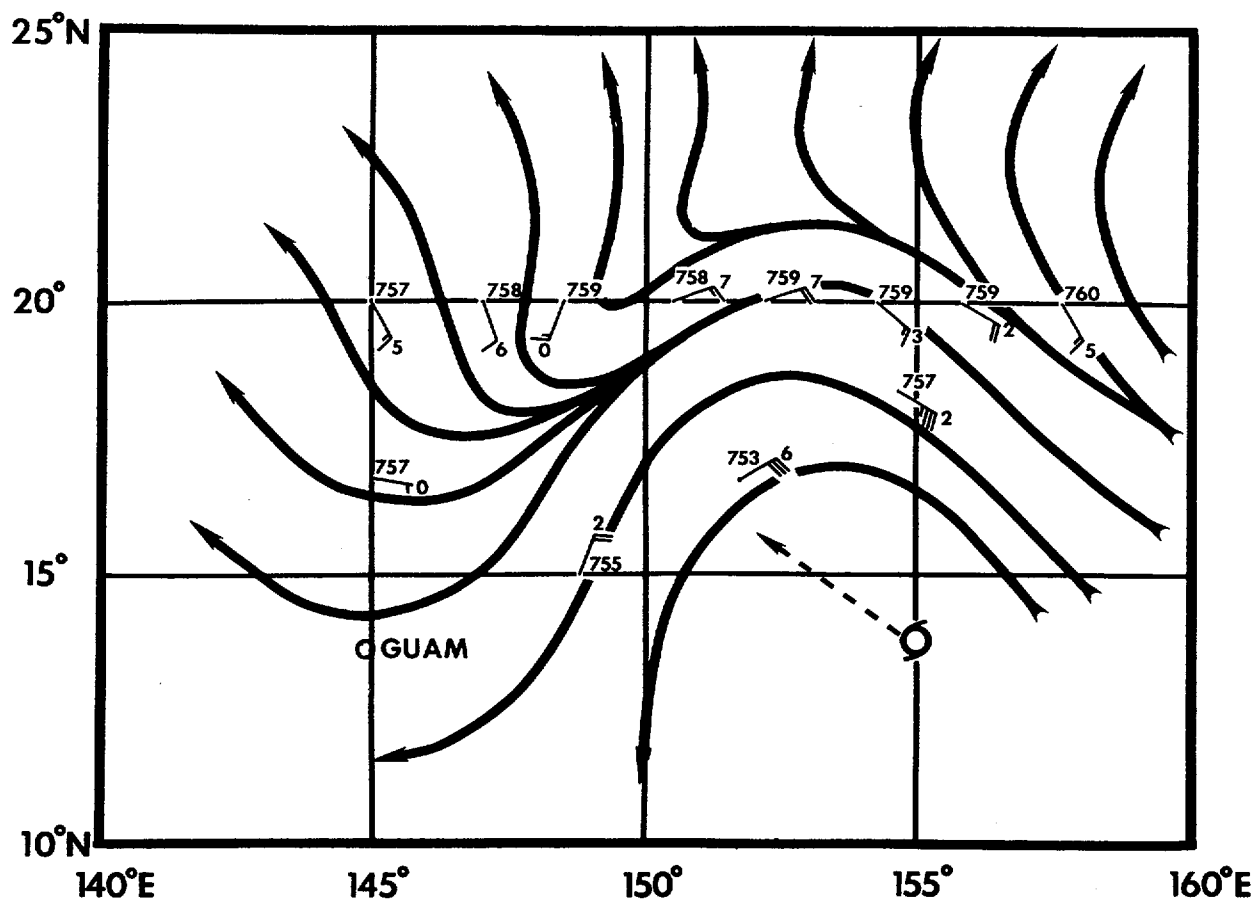
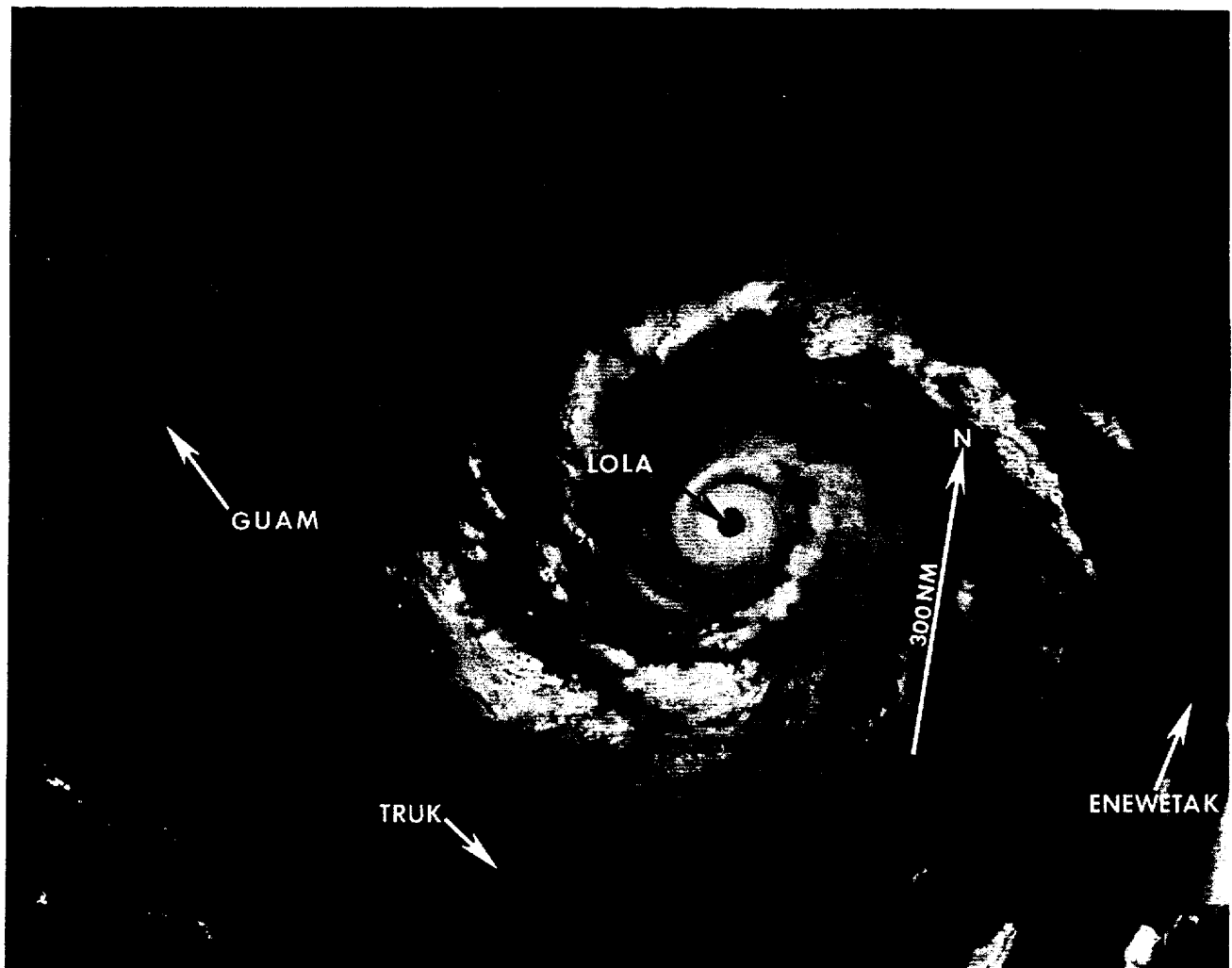


Figure 3-03-7. Data from the fourth synoptic track (192200Z through 200400Z May) shows the mid-level ridging displaced south and west across Guam.



*Figure 3-03-8. Lola shortly after it peaked at 150 kt (77 m/sec) (192350Z May DMSP visual imagery).*



fact as the 700 mb heights also increased dramatically. Figures 3-03-9 and 3-03-10 show Lola weakening and becoming extratropical. Extratropical transition was completed on 23 May.

In retrospect, the early forecasts followed the Nested Tropical Cyclone Model (NTCM) too long during Lola's development and took the system toward the Marianas. Fortunately, JTWC made the right decision

later to follow the One-way Interactive Tropical Cyclone Model (OTCM) and curved Lola toward the northeast before any major efforts had to be made to sortie ships and evacuate aircraft from the military bases on Guam (closest point of approach to Guam was 405 nm (750 km) to the northeast). However, the statistical damage had already been done and the overall forecast performance was only fair.

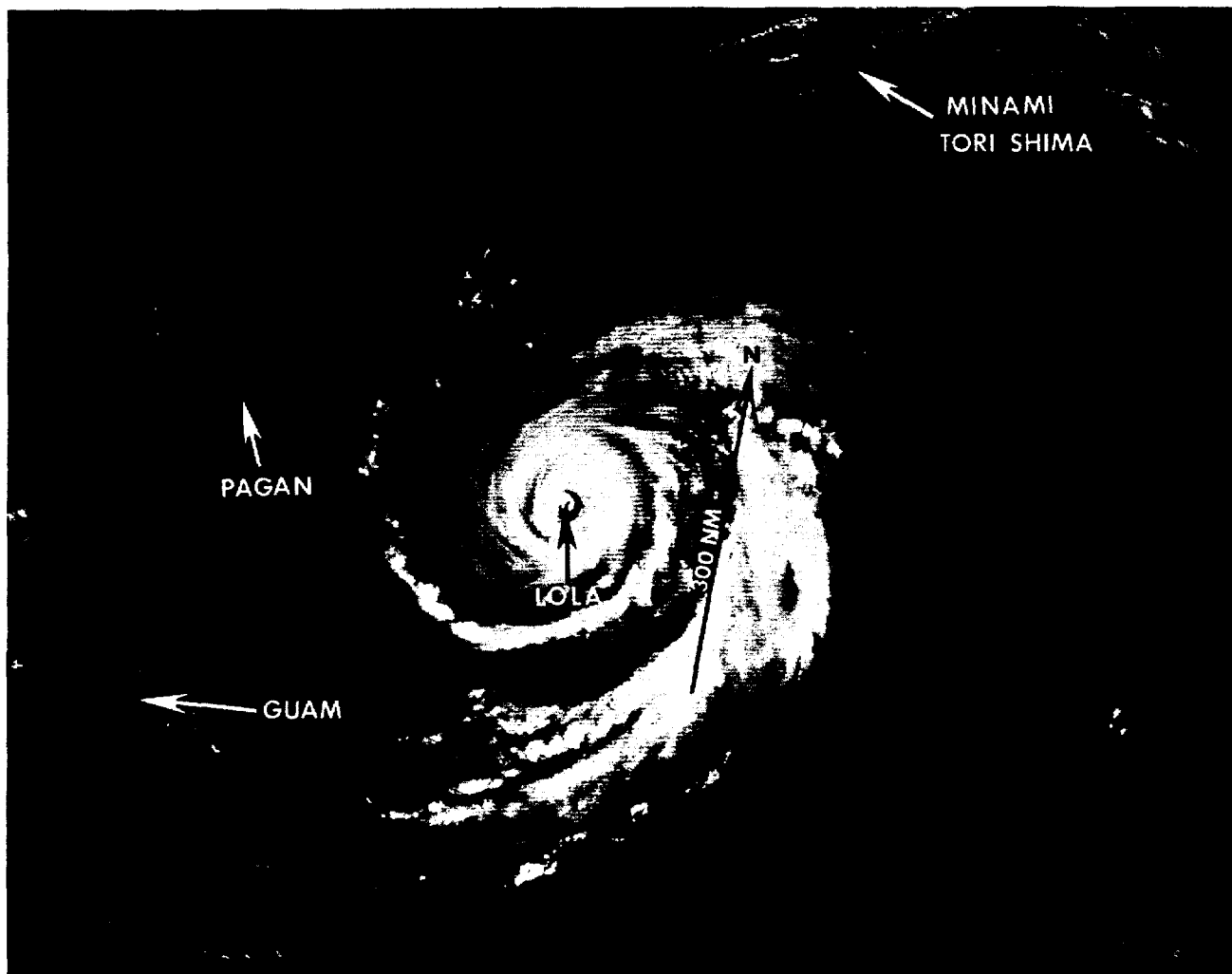
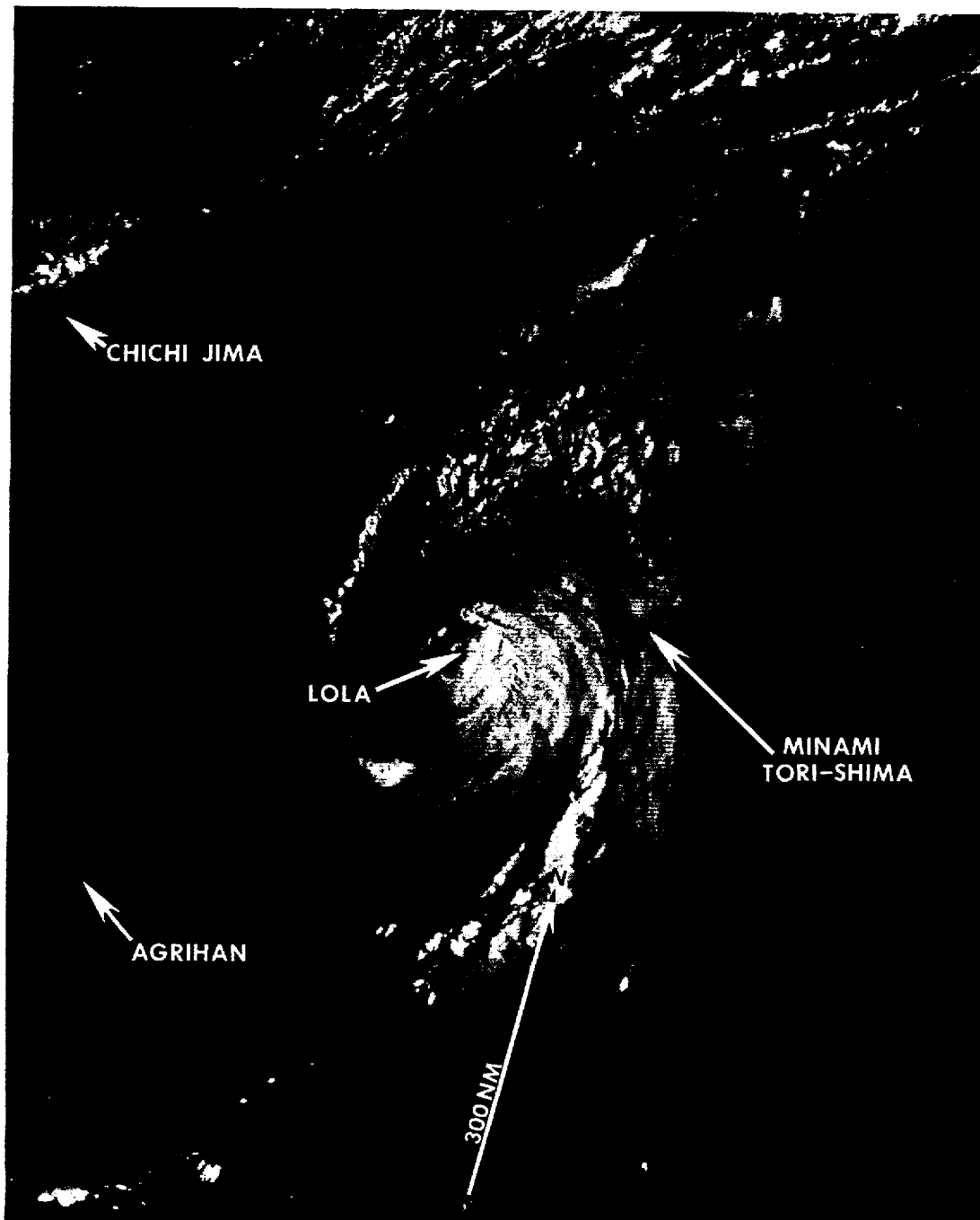


Figure 3-03-9. Lola decreasing in intensity (202329Z May DMSP visual imagery).



*Figure 3-03-10. Lola transitioning to an extratropical system (212309Z May DMSP visual imagery).*